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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/527,431	03/09/2005	Alwin Rogier Martijn Verschueren	NL02 0824 US	6822

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EXAMINER	
JOSEPH, DENNIS P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,431	VERSCHUEREN ET AL.	
	Examiner	Art Unit	
	Dennis P. Joseph	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 March 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/527,431.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/9/2005*.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to application No. 10/527,431 on March 9, 2005. Claims 1-19 are pending and have been examined.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections – 35 USC § 103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 103(a) that forms the basis for the rejections under this section made in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 1, 5-9, 11, 12, 15-19** rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanbe et al. (US 2002/0089477 A1)** in view of **Iijima (US 6,909,479 B2)**

Kanbe teaches in Claim 1:

A method of reducing visible flicker in a transflective display device ([0103]) having a plurality of pixels, each pixel comprising a transmissive sub-pixel and a reflective sub-pixel ([0091] and [0092] teach of the reflecting and transparent electrodes and either of which is used as the pixel electrode.) comprising the steps of:

driving the pixels with an alternating voltage (Figure 9A shows AC power source **A**),

determining a first desired compensation voltage for reducing the optical flicker of the transmissive sub-pixels and a second desired compensation voltage for reducing the optical flicker of the reflective sub-pixels; ([0007], "a DC voltage component resulting from voltage variation occurring in the pixel electrode is referred to as the first DC voltage component .DELTA.V1." This DC component is flicker and delta V1 is the voltage variation between the two substrates with the pixel and electrode, [0089].) ([0099], "Upon detecting such a **flicker**, the potential of the common electrode **11** is so set that the **detected flicker is reduced to a minimum**.")

deriving a common compensation voltage from said first desired compensation voltage and said second desired compensation voltage ([0012], delta V2 is the difference in characteristics between the substrates and the counter potential level is shifted to cancel out the second DC voltage component. The potential is further shifted by delta V2 in addition to V1, [0102]); and

applying said common compensation voltage to both the transmissive and the reflective sub-pixels ([0093]),

Kanbe does not explicitly teach "**each** pixel comprising a transmissive sub-pixel and a reflective sub-pixel"

However, in the same field of endeavor, liquid crystal displays, Iijima teaches a "**transflective** liquid crystal display capable of display with good coloring and high visibility in both reflective mode and transmissive mode, and also relates to an electronic apparatus using the same" (Iijima,Column 1, Lines 7-9). This sub-pixel structure is used to implement Kanbe's driving method of reducing flicker in both the transmissive and reflexive sub-pixels.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the transflective display having a sub-pixel structure as taught by Iijima with Kanbe's driving method for a liquid crystal device with the motivation that "Also, with the color transflective liquid crystal display employing both a reflective mode and a transmissive mode, display with good coloring and high visibility can be obtained both in the reflective mode and transmissive mode." (Iijima, Column 2, Lines 22-24)

Kanbe and Iijima teach in Claim 5:

A method as claimed in claim 1, wherein the step of determining the first and the second desired compensation voltages comprises the steps of driving a first flicker sensor related to the transmissive sub-pixels and a second flicker sensor related to the reflective sub-pixels; and determining the first desired compensation voltage from the output of the first flicker sensor and determining the second desired compensation voltage from the output of the second flicker

sensor. (Kanbe, [0007], "a DC voltage component resulting from voltage variation occurring in the pixel electrode is referred to as the first DC voltage component .DELTA.V1." This DC component is flicker and delta V1 is the voltage variation between the two substrates with the pixel and electrode, which are the reflective and transmissive parts, [0089].)

Kanbe and Iijima teach in Claim 6:

A method as claimed in claim 1, further comprising the step of measuring the intensity of ambient light surrounding the display, wherein the common compensation voltage is derived as a function of the intensity of the ambient light. (Kanbe, [0100] – [0101], brightness variation detector **17** sets a value across the common electrode which can come up with a voltage delta V2.)

Kanbe and Iijima teach in Claim 7:

A method as claimed in claim 1, wherein the display device is illuminated by means of a backlight, and wherein the common compensation voltage is derived as a function of a mode of operation of the backlight. (Kanbe, [0099], brightness variation detector **17** detects and set a voltage level to be applied.) ([0126], brightness of the display varies with the applied voltage component.)

Kanbe and Iijima teach in Claim 8:

A method as claimed in claim 7, further comprising the steps of measuring the intensity of ambient light surrounding the display and selecting the mode of operation of the backlight as a

function of said intensity of ambient light. (Kanbe, [0126], brightness of the display varies with the applied voltage component.)

Kanbe and Iijima teach in Claim 9:

A method as claimed in claim 1, wherein the common compensation voltage is derived as the average of the first desired compensation voltage and the second desired compensation voltage. ([0102])

Kanbe teaches in Claim 11:

A transflective display device comprising a plurality of pixels, each pixel comprising a transmissive sub-pixel and a reflective sub-pixel ([0091] and [0092] teach of the reflecting and transparent electrodes and either of which is used as the pixel electrode.), the device further comprising electrical circuitry and driver circuitry (Figure 3), arranged to drive the pixels with an alternating voltage (Figure 9 shows the AC source), characterized in that:

means are provided for determining a first desired compensation voltage for reducing the optical flicker of the transmissive sub-pixels and a second desired compensation voltage for reducing the optical flicker of the reflective sub-pixels ([0007], "a DC voltage component resulting from voltage variation occurring in the pixel electrode is referred to as the first DC voltage component .DELTA.V1." This DC component is flicker and delta V1 is the voltage variation between the two substrates with the pixel and electrode, [0089].);

the electrical circuitry is arranged to derive a common compensation voltage from said first desired compensation voltage and said second desired compensation voltage ([0005] shows delta V2 to be determined from the gate voltages);

and in that

the driver circuitry is arranged to apply said common compensation voltage to both the transmissive sub-pixels and the reflective sub-pixels. ([0095]), but

Kanbe does not explicitly teach "**each** pixel comprising a transmissive sub-pixel and a reflective sub-pixel"

However, in the same field of endeavor, liquid crystal displays, Iijima teaches a "**transflective** liquid crystal display capable of display with good coloring and high visibility in both reflective mode and transmissive mode, and also relates to an electronic apparatus using the same" (Iijima, Column 1, Lines 7-9). This sub-pixel structure is used to implement Kanbe's driving method of reducing flicker in both the transmissive and reflexive sub-pixels.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the transflective display having a sub-pixel structure as taught by Iijima with Kanbe's driving method for a liquid crystal device with the motivation that "Also, with the color transflective liquid crystal display employing both a reflective mode and a transmissive mode, display with good coloring and high visibility can be obtained both in the reflective mode and transmissive mode." (Iijima, Column 2, Lines 22-24)

Kanbe and Iijima teach in Claim 12:

A display device as claimed in claim 11, the display device being a transflective liquid crystal display device. (Iijima, Column 1, Lines 7-9)

Kanbe and Iijima teach in Claim 15:

A display device as claimed in claim 11, comprising:

a transmissive flicker sensor (Kanbe, Figure 4 has the transparent electrode, [0068]), arranged to determine a first internal voltage; and

a reflective flicker sensor (Figure 4 has the reflective electrode ([0068]), arranged to determine a second internal voltage, the electrical circuitry being arranged to derive the first desired compensation voltage from the first internal voltage and the second desired compensation voltage from the second internal voltage. (delta V1, [0089])

Kanbe and Iijima teach in Claim 16:

A display device as claimed in claim 11, further comprising a common electrode, common to each transmissive and reflective sub-pixel, wherein driver circuitry is arranged to apply the common compensation voltage to said common electrode. (Kanbe, Figure 4 shows the common electrode **11**, [0068].)

Kanbe and Iijima teach in Claim 17:

A display device as claimed in claim 11, further comprising a sensor for measuring the intensity of ambient light surrounding the display, wherein the electrical circuitry is arranged to

derive the common compensation voltage as a function of the intensity of the ambient light. (Kanbe, [0099], brightness variation detector **17** detects and set a voltage level to be applied.) ([0126], brightness of the display varies with the applied voltage component.)

Kanbe and Iijima teach in Claim 18:

A display device as claimed in claim 12, further comprising a backlight, wherein the electrical circuitry is arranged to derive the common compensation voltage as a function of a mode of operation of the backlight. (Kanbe, [0126], brightness of the display varies with the applied voltage component.)

Kanbe and Iijima teach in Claim 19:

A display device according to claim 18, further comprising a sensor for measuring the intensity of ambient light surrounding the display, and wherein the electrical circuitry is arranged to select the mode of operation of the backlight as a function the intensity of ambient light. (Kanbe, [0099], brightness variation detector **17** detects and set a voltage level to be applied.) ([0126], brightness of the display varies with the applied voltage component.)

5. **Claims 2-4, 10, 13 and 14** rejected under 35 U.S.C. 103(a) as being unpatentable over **Kanbe et al. (US 2002/0089477 A1)** and **Iijima (US 6,909,479 B2)** as applied to claim 3, above, and further in view of **Koyama (6,023,257)**

Kanbe and Iijima teach in Claim 2:

A method as claimed in claim 1, further comprising the steps of: determining a lowest available frame frequency setting for which any remaining flicker is invisible (Kanbe, [0099], "Upon detecting such a **flicker**, the potential of the common electrode **11** is so set that the **detected flicker is reduced to a minimum**.")

Kanbe and Iijima do not explicitly teach that the display is "setting a frame frequency at which the display is driven to said lowest available frame frequency setting.

However, in the same field of endeavor, liquid crystal displays, Koyama teaches "As a result, **flicker**, which would normally be caused by a voltage drop due to drawn electric charge when each TFT of the liquid crystal panel **202** is activated can be prevented." Also, "In the present invention, an image signal is corrected according to the characteristics of each individual active matrix display. The inversion **frequency** of the image signal **is reduced** without impairing the image quality." (Koyama, Column 4, Lines 53-67) The frame frequency is set based on the amount of ambient light detected by brightness variation detector **17**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the frequency frame setting as taught by Koyama with Kanbe's driving method for a liquid crystal device with the motivation that by using the inversion frequency at a minimum, it can "contribute to a decrease in electric power consumed by the active matrix display." (Koyama, Column 4, Lines 66-67)

Kanbe, Iijimia and Koyama teach in Claim 3:

A method as claimed in claim 2, wherein the lowest available frame frequency setting is selected from a discrete set of frame frequency settings listed in a look-up table. (Koyama, Column 3, Lines 34-36, "Then, the frequency of the analog image signal is varied to find the frequency at which a flicker occurs." It finds the lowest frequency from value storage device **103** and applies it.)

Kanbe, Iijimia and Koyama teach in Claim 4:

A method as claimed in claim 2, further comprising the step of measuring the intensity of ambient light surrounding the display, and wherein the lowest available frame frequency setting is derived as a function of the intensity of the ambient light. (Kanbe, [0099], brightness variation detector **17**.)

Kanbe and Iijima teach in Claim 10:

A method as claimed in claim 1, in dependence of a remaining optical flicker. (Kanbe, [0099]), but

Kanbe does not explicitly teach that the method "further comprising the step of altering a data inversion scheme, according to which scheme the pixels are driven."

However, in the same field of endeavor, liquid crystal displays, Koyama teaches "As a result, **flicker**, which would normally be caused by a voltage drop due to drawn electric charge when each TFT of the liquid crystal panel **202** is activated can be prevented." Also, "In the present invention, an image signal is corrected according to the characteristics of each individual active matrix display. The inversion **frequency** of the image signal **is reduced** without impairing the image quality." (Koyama, Column 4, Lines 53-67) The frame frequency is set based on the amount of ambient light detected by brightness variation detector **17**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the inversion scheme as taught by Koyama with Kanbe's driving method for a liquid crystal device with the motivation that by using the inversion scheme, it will lead to less deterioration of the liquid crystal display materials. (Koyama, Column 2, Lines 8-11)

Kanbe, Iijima and Koyama teach in Claim 13:

A display device as claimed in claim 11, having a predefined set of available frame frequency settings and in which the electrical circuitry is arranged to determine a lowest

available frame frequency setting for which flicker is invisible, and to set a frame frequency to said lowest available frame frequency setting. (Koyama, Column 4, Lines 53-67)

Kanbe teaches in Claim 14:

A display device as claimed in claim 13, further comprising a sensor for measuring an intensity of ambient light surrounding the display, and wherein the electrical circuitry is arranged to determine the lowest available frame frequency setting for which flicker is invisible as a function of the intensity of the ambient light. (Kanbe, [0099], brightness variation detector **17**.)

Conclusions

6. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure. Waterman et al. (US 2002/0180674 A1, Tsuda et al. (US 2002/1080673) (US 6313818 B1), and Su et al. (US 6590555 B2)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis P. Joseph whose telephone number is 571-270-1459. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJ

AMR A. AWAD
SUPERVISORY PATENT EXAMINER